General

Guideline Title

Medicines optimisation: the safe and effective use of medicines to enable the best possible outcomes.

Bibliographic Source(s)

National Institute for Health and Care Excellence (NICE). Medicines optimisation: the safe and effective use of medicines to enable the best possible outcomes. London (UK): National Institute for Health and Care Excellence (NICE); 2015 Mar 4. 47 p. (NICE guideline; no. 5).

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

Note from the National Guideline Clearinghouse (NGC): This guideline was developed by the National Institute for Health and Care Excellence (NICE) Medicines Prescribing Centre. See the "Availability of Companion Documents" field for the full version of this guidance.

The wording used in the recommendations in this guideline (for example, words such as 'offer' and 'consider') denotes the certainty with which the recommendation is made (the strength of the recommendation) and is defined at the end of the "Major Recommendations" field.

Systems for Identifying, Reporting and Learning from Medicines-Related Patient Safety Incidents

Improving learning from medicines-related patient safety incidents is important to guide practice and minimise patient harm. Medicines-related patient safety incidents are unintended or unexpected incidents that are specifically related to medicines use, which could have or did lead to patient harm. These include potentially avoidable medicines-related hospital admissions and re-admissions, medication errors, near misses and potentially avoidable adverse events.

Organisations should support a person-centred, 'fair blame' culture that encourages reporting and learning from medicines-related patient safety incidents.

Health and social care practitioners should explain to patients, and their family members or carers where appropriate, how to identify and report medicines-related patient safety incidents.

Organisations should ensure that robust and transparent processes are in place to identify, report, prioritise, investigate and learn from medicines-related patient safety incidents, in line with national patient safety reporting systems – for example, the National Reporting and Learning System

Organisations should consider using multiple methods to identify medicines-related patient safety incidents – for example, health record review, patient surveys and direct observation of medicines administration. They should agree the approach locally and review arrangements regularly to reflect local and national learning.

Organisations should ensure that national medicines safety guidance, such as patient safety alerts, are actioned within a specified or locally agreed timeframe.

Organisations should consider assessing the training and education needs of health and social care practitioners to help patients and practitioners to identify and report medicines-related patient safety incidents.

Health and social care practitioners should report all identified medicines-related patient safety incidents consistently and in a timely manner, in line with local and national patient safety reporting systems, to ensure that patient safety is not compromised.

Organisations and health professionals should consider applying the principles of the pharmacist-led information technology intervention for medication errors (PINCER) intervention to reduce the number of medicines-related patient safety incidents, taking account of existing systems and resource implications. These principles include:

- Using information technology support
- Using educational outreach with regular reinforcement of educational messages
- Actively involving a multidisciplinary team, including general practitioners (GPs), nurses and support staff
- Having dedicated pharmacist support
- Agreeing an action plan with clear objectives
- Providing regular feedback on progress
- Providing clear, concise, evidence-based information

Consider using a screening tool – for example, the STOPP/START[1] tool in older people – to identify potential medicines-related patient safety incidents in some groups. These groups may include:

- Adults, children and young people taking multiple medicines (polypharmacy)
- Adults, children and young people with chronic or long-term conditions
- Older people

Organisations should consider exploring what barriers exist that may reduce reporting and learning from medicines-related patient safety incidents. Any barriers identified should be addressed – for example, using a documented action plan.

Health and social care organisations and practitioners should:

- Ensure that action is taken to reduce further risk when medicines-related patient safety incidents are identified.
- Apply and share learning in the organisation and across the local health economy, including feedback on trends or significant incidents to support continuing professional development. This may be through a medicines safety officer, controlled drugs accountable officer or other medicines safety lead.

[1]STOPP, Screening Tool of Older Persons' potentially inappropriate Prescriptions; START, Screening Tool to Alert to Right Treatment

Medicines-related Communication Systems When Patients Move from One Care Setting to Another

Relevant information about medicines should be shared with patients, and their family members or carers, where appropriate, and between health and social care practitioners when a person moves from one care setting to another, to support high-quality care. This includes transfers within an organisation – for example, when a person moves from intensive care to a hospital ward – or from one organisation to another – for example, when a person is admitted to hospital, or discharged from hospital to their home or other location.

Note: Recommendations in this section update and replace recommendation 1.4.2 in Medicines adherence: Involving patients in decisions about prescribed medicines and supporting adherence (NICE guideline CG76).

Organisations should ensure that robust and transparent processes are in place, so that when a person is transferred from one care setting to another:

- The current care provider shares complete and accurate information about the person's medicines with the new care provider and

- The new care provider receives and documents this information, and acts on it.

Note: Take into account the 5 rules set out in the Health and Social Care Information Centre's A guide to confidentiality in health and social care (2013) when sharing information.

Organisational and individual roles and responsibilities should be clearly defined. Regularly review and monitor the effectiveness of these processes. See also section below on medicines reconciliation.

For all care settings, health and social care practitioners should proactively share complete and accurate information about medicines:

- Ideally within 24 hours of the person being transferred, to ensure that patient safety is not compromised and
- In the most effective and secure way, such as by secure electronic communication, recognising that more than one approach may be needed.

Health and social care practitioners should share relevant information about the person and their medicines when a person transfers from one care setting to another. This should include, but is not limited to, all of the following:

- Contact details of the person and their GP
- Details of other relevant contacts identified by the person and their family members or carers where appropriate – for example, their nominated community pharmacy
- Known drug allergies and reactions to medicines or their ingredients, and the type of reaction experienced (see the NGC summary of the NICE guideline Drug allergy: diagnosis and management of drug allergy in adults, children and young people [NICE clinical guideline 183])
- Details of the medicines the person is currently taking (including prescribed, over-the-counter and complementary medicines) – name, strength, form, dose, timing, frequency and duration, how the medicines are taken and what they are being taken for
- Changes to medicines, including medicines started or stopped, or dosage changes, and reason for the change
- Date and time of the last dose, such as for weekly or monthly medicines, including injections
- What information has been given to the person, and their family members or carers where appropriate
- Any other information needed – for example, when the medicines should be reviewed, ongoing monitoring needs and any support the person needs to carry on taking the medicines. Additional information may be needed for specific groups of people, such as children.

Health and social care practitioners should discuss relevant information about medicines with the person, and their family members or carers where appropriate, at the time of transfer. They should give the person, and their family members or carers where appropriate, a complete and accurate list of their medicines in a format that is suitable for them. This should include all current medicines and any changes to medicines made during their stay.

Consider sending a person's medicines discharge information to their nominated community pharmacy, when possible and in agreement with the person.

Organisations should consider arranging additional support for some groups of people when they have been discharged from hospital, such as pharmacist counselling, telephone follow-up, and GP or nurse follow-up home visits. These groups may include:

- Adults, children and young people taking multiple medicines (polypharmacy)
- Adults, children and young people with chronic or long-term conditions
- Older people

Medicines Reconciliation

Medicines reconciliation, as defined by the Institute for Healthcare Improvement, is the process of identifying an accurate list of a person's current medicines and comparing them with the current list in use, recognising any discrepancies, and documenting any changes, thereby resulting in a complete list of medicines, accurately communicated. The term 'medicines' also includes over-the-counter or complementary medicines, and any discrepancies should be resolved. The medicines reconciliation process will vary depending on the care setting that the person has just moved into – for example, from primary care into hospital, or from hospital to a care home.

In an acute setting, accurately list all of the person's medicines (including prescribed, over-the-counter and complementary medicines) and carry out medicines reconciliation within 24 hours or sooner if clinically necessary, when the person moves from one care setting to another – for example, if they are admitted to hospital.

Recognise that medicines reconciliation may need to be carried out on more than one occasion during a hospital stay – for example, when the person is admitted, transferred between wards or discharged.

In primary care, carry out medicines reconciliation for all people who have been discharged from hospital or another care setting. This should happen as soon as is practically possible, before a prescription or new supply of medicines is issued and within 1 week of the GP practice receiving the information.

In all care settings organisations should ensure that a designated health professional has overall organisational responsibility for the medicines reconciliation process. The process should be determined locally and include:

- Organisational responsibilities
- Responsibilities of health and social care practitioners involved in the process (including who they are accountable to)
- Individual training and competency needs

Organisations should ensure that medicines reconciliation is carried out by a trained and competent health professional – ideally a pharmacist, pharmacy technician, nurse or doctor – with the necessary knowledge, skills and expertise including:

- Effective communication skills
- Technical knowledge of processes for managing medicines
- Therapeutic knowledge of medicines use

Involve patients and their family members or carers, where appropriate, in the medicines reconciliation process.

When carrying out medicines reconciliation, record relevant information on an electronic or paper-based form. See section above on medicines-related communication systems.

Medication Review

Medication review can have several different interpretations and there are also different types which vary in their quality and effectiveness. Medication reviews are carried out in people of all ages. In this guideline medication review is defined as 'a structured, critical examination of a person's medicines with the objective of reaching an agreement with the person about treatment, optimising the impact of medicines, minimising the number of medication-related problems and reducing waste'. See also 'Patient Decision Aids Used in Consultations Involving Medicines.'

Consider carrying out a structured medication review for some groups of people when a clear purpose for the review has been identified. These groups may include:

- Adults, children and young people taking multiple medicines (polypharmacy)
- Adults, children and young people with chronic or long-term conditions
- Older people

Organisations should determine locally the most appropriate health professional to carry out a structured medication review, based on their knowledge and skills, including all of the following:

- Technical knowledge of processes for managing medicines
- Therapeutic knowledge on medicines use
- Effective communication skills

The medication review may be led, for example, by a pharmacist or by an appropriate health professional who is part of a multidisciplinary team.

During a structured medication review, take into account:

- The person's, and their family members' or carers' where appropriate, views and understanding about their medicines
- The person's, and their family members' or carers' where appropriate, concerns, questions or problems with the medicines
- All prescribed, over-the-counter and complementary medicines that the person is taking or using, and what these are for
- How safe the medicines are, how well they work for the person, how appropriate they are, and whether their use is in line with national guidance
- Whether the person has had or has any risk factors for developing adverse drug reactions (report adverse drug reactions in line with the yellow card scheme)
- Any monitoring that is needed

Self-Management Plans

Self-management plans can be patient-led or professional-led and they aim to support people to be empowered and involved in managing their

condition. Different types of self-management plans exist and they vary in their content depending on the needs of the individual person. Self-management plans can be used in different settings. In the original guideline document self-management plans are structured, documented plans that are developed to support a person's self management of their condition using medicines. People using self-management plans can be supported to use them by their family members or carers who can also be involved when appropriate during discussions – for example, a child and their parent(s) using a self-management plan.

When discussing medicines with people who have chronic or long-term conditions, consider using an individualised, documented self-management plan to support people who want to be involved in managing their medicines. Discuss at least all of the following:

- The person's knowledge and skills needed to use the plan, using a risk assessment if needed
- The benefits and risks of using the plan
- The person's values and preferences
- How to use the plan
- Any support, signposting or monitoring the person needs

Record the discussion in the person's medical notes or care plan as appropriate.

When developing an individualised, documented self-management plan, provide it in an accessible format for the person and consider including:

- The plan's start and review dates
- The condition(s) being managed
- A description of medicines being taken under the plan (including the timing)
- A list of the medicines that may be self-administered under the plan and their permitted frequency of use, including any strength or dose restrictions and how long a medicine may be taken for
- Known drug allergies and reactions to medicines or their ingredients, and the type of reaction experienced (see the NGC summary of the NICE guideline Drug allergy: diagnosis and management of drug allergy in adults, children and young people [NICE clinical guideline 183])
- Arrangements for the person to report suspected or known adverse reactions to medicines
- Circumstances in which the person should refer to, or seek advice from, a health professional
- The individual responsibilities of the health professional and the person
- Any other instructions the person needs to safely and effectively self-manage their medicines

Review the self-management plan to ensure the person does not have problems using it.

Patient Decision Aids Used in Consultations Involving Medicines

Many people wish to be active participants in their own healthcare, and to be involved in making decisions about their medicines. Patient decision aids can support health professionals to adopt a shared decision-making approach in a consultation, to ensure that patients, and their family members or carers where appropriate, are able to make well-informed choices that are consistent with the person's values and preferences.

Offer all people the opportunity to be involved in making decisions about their medicines. Find out what level of involvement in decision-making the person would like and avoid making assumptions about this.

Find out about a person's values and preferences by discussing what is important to them about managing their condition(s) and their medicines. Recognise that the person's values and preferences may be different from those of the health professional and avoid making assumptions about these.

Apply the principles of evidence-based medicine when discussing the available treatment options with a person in a consultation about medicines. Use the best available evidence when making decisions with or for individuals, together with clinical expertise and the person's values and preferences.

In a consultation about medicines, offer the person, and their family members or carers where appropriate, the opportunity to use a patient decision aid (when one is available) to help them make a preference-sensitive decision that involves trade-offs between benefits and harms. Ensure the patient decision aid is appropriate in the context of the consultation as a whole.

Do not use a patient decision aid to replace discussions with a person in a consultation about medicines.

Recognise that it may be appropriate to have more than one consultation to ensure that a person can make an informed decision about their medicines. Give the person the opportunity to review their decision, because this may change over time – for example, a person's baseline risk may change.

Ensure that patient decision aids used in consultations about medicines have followed a robust and transparent development process, in line with the International Patient Decision Aid Standards (IPDAS) criteria .

Before using a patient decision aid with a person in a consultation about medicines, read and understand its content, paying particular attention to its limitations and the need to adjust discussions according to the person's baseline risk.

Ensure that the necessary knowledge, skills and expertise have been obtained before using a patient decision aid. This includes:

- Relevant clinical knowledge
- Effective communication and consultation skills, especially when finding out patients' values and preferences
- Effective numeracy skills, especially when explaining the benefits and harms in natural frequencies, and relative and absolute risk
- Explaining the trade-offs between particular benefits and harms

Organisations should consider training and education needs for health professionals in developing the skills and expertise to use patient decision aids effectively in consultations about medicines with patients, and their family members or carers where appropriate.

Organisations should consider identifying and prioritising which patient decision aids are needed for their patient population through, for example, a local medicines decision-making group. They should agree a consistent, targeted approach in line with local pathways and review the use of these patient decision aids regularly.

Organisations and health professionals should ensure that patient decision aids prioritised for use locally are disseminated to all relevant health professionals and stakeholder groups, such as clinical networks.

Clinical Decision Support

Clinical decision support software is a component of an integrated clinical IT system providing support to clinical services, such as in a GP practice or secondary care setting. These integrated clinical IT systems are used to support health professionals to manage a person's condition. In this guideline the clinical decision support software relates to computerised clinical decision support, which may be active or interactive, at the point of prescribing medicines.

Organisations should consider computerised clinical decision support systems (taking account of existing systems and resource implications) to support clinical decision-making and prescribing, but ensure that these do not replace clinical judgement.

Organisations should ensure that robust and transparent processes are in place for developing, using, reviewing and updating computerised clinical decision support systems.

Organisations should ensure that health professionals using computerised clinical decision support systems at the point of prescribing have the necessary knowledge and skills to use the system, including an understanding of its limitations.

When using a computerised clinical decision support system to support clinical decision-making and prescribing, ensure that it:

- Identifies important safety issues
- Includes a system for health professionals to acknowledge mandatory alerts. This should not be customisable for alerts relating to medicines-related 'never events'
- Reflects the best available evidence and is up-to-date
- Contains useful clinical information that is relevant to the health professional to reduce 'alert fatigue' (when a prescriber's responsiveness to a particular type of alert declines as they are repeatedly exposed to that alert over time)

Medicines-related Models of Organisational and Cross-sector Working

The introduction of skill mixing of various health and social care practitioners to meet the needs of different groups of people has led to different types of models of care emerging across health and social care settings. Cross-organisational working further provides seamless care during the patient care pathway when using health and social care services. The type of model of care used will be determined locally based on the resources and health and social care needs of the population in relation to medicines.

Organisations should consider a multidisciplinary team approach to improve outcomes for people who have long-term conditions and take multiple medicines (polypharmacy).

Organisations should involve a pharmacist with relevant clinical knowledge and skills when making strategic decisions about medicines use or when developing care pathways that involve medicines use.

Definitions:

Strength of Recommendations

Some recommendations can be made with more certainty than others. The Guideline Development Group (GDG) makes a recommendation based on the trade-off between the benefits and harms of an intervention, taking into account the quality of the underpinning evidence. For some interventions, the GDG is confident that, given the information it has looked at, most patients would choose the intervention. The wording used in the recommendations in this guideline denotes the certainty with which the recommendation is made (the strength of the recommendation).

Interventions That Must (or Must Not) Be Used

The GDG usually uses 'must' or 'must not' only if there is a legal duty to apply the recommendation. Occasionally the GDG uses 'must' (or 'must not') if the consequences of not following the recommendation could be extremely serious or potentially life threatening.

Interventions That Should (or Should Not) Be Used – a 'Strong' Recommendation

The GDG uses 'offer' (and similar words such as 'refer' or 'advise') when confident that, for the vast majority of patients, an intervention will do more good than harm, and be cost effective. Similar forms of words (for example, 'Do not offer…') are used when the GDG is confident that an intervention will not be of benefit for most patients.

Interventions That Could Be Used

The GDG uses 'consider' when confident that an intervention will do more good than harm for most patients, and be cost effective, but other options may be similarly cost effective. The choice of intervention, and whether or not to have the intervention at all, is more likely to depend on the patient's values and preferences than for a strong recommendation, and so the healthcare professional should spend more time considering and discussing the options with the patient.

Clinical Algorithm(s)

A National Institute for Health and Care Excellence (NICE) pathway titled "Medicines Optimisation Overview" is available from the NICE Web site .

Scope

Disease/Condition(s)

Any disease or condition, including long-term conditions, requiring use of medicines

Guideline Category

Counseling

Management

Risk Assessment

Screening

Clinical Specialty

Family Practice

Geriatrics

Internal Medicine

Pediatrics

Intended Users

Advanced Practice Nurses

Health Care Providers

Hospitals

Nurses

Patients

Pharmacists

Physician Assistants

Physicians

Social Workers

Guideline Objective(s)

- To offer best practice advice on the care of all people who are using medicines and also those who are receiving suboptimal benefit from medicines
- To provide further clarity on medicines optimisation to ensure National Health Service patients get the best possible outcomes from their medicines

Target Population

- All children, young people and adults using medicines
- All children, young people and adults who are receiving sub-optimal benefit from medicines, for example, not receiving a medicine when they should or could benefit from medicines
- All practitioners who prescribe, supply and/or administer medicines

Interventions and Practices Considered

1. Systems for identifying, reporting and learning from medicines-related patient safety incidents
2. Medicines-related communication systems when patients move from one care setting to another
3. Medicines reconciliation
4. Medication review
5. Self-management plans
6. Patient decision aids used in consultations involving medicines
7. Clinical decision support
8. Medicines-related models of organisational and cross-sector working

Major Outcomes Considered

- Mortality
- Clinical outcomes
- Hospitalisation and health and social care utilisation
- Planned and unplanned contacts
- Medicines-related problems, such as prescribing errors, administration errors, dispensing errors, monitoring errors, near misses and adverse

effects
- Health and social care related quality of life
- Patient-reported outcomes, such as medicines adherence, patient experience, patient satisfaction with decision-making
- Cost-effectiveness

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Note from the National Guideline Clearinghouse (NGC): This guideline was developed by the National Institute for Health and Care Excellence (NICE) Medicines Prescribing Centre. See the "Availability of Companion Documents" field for the full version of this guidance.

Developing the Review Questions and Outcomes

Review Questions

Review questions were developed in a PICO (patient, intervention, comparison and outcome) format and intervention reviews were carried out. For each review question a review protocol was developed. The review protocols then informed the literature search strategy for each review question. The methods used are detailed fully in the NICE guidelines manual 2012, section 4.3 (see also the "Availability of Companion Documents" field).

During the scoping phase 9 review questions were identified. These were all questions to identify the effectiveness and cost-effectiveness of interventions. In line with the NICE guidelines manual 2012 section 4.3, review questions relating to interventions are usually best answered by randomised controlled trials (RCTs), because this is most likely to give an unbiased estimate of the effects of an intervention.

The Guideline Development Group (GDG) discussed the draft review questions at GDG meetings and agreed that minor changes were needed to several outlined in the final scope document; see Table 2 in the full version of the guideline.

The GDG agreed to amalgamate 2 review questions. Therefore, 8 review questions in total were finalised by the GDG. They are shown in Table 3 in the full version of the guideline.

See the full version of the guideline for information on writing the review protocols.

Identifying the Evidence

Clinical Literature Searching

Scoping searches were undertaken in July 2013 in order to identify previous clinical guidelines, health technology assessment reports, key systematic reviews, and economic evaluations relevant to the topic. A list of sources searched can be found in Appendix C.1 in the full guideline appendices (see the "Availability of Companion Documents" field).

Systematic literature searches were carried out by an information specialist from NICE guidance information services between November 2013 and May 2014 to identify published clinical evidence relevant to the review questions. The clinical evidence search strategies can be found in Appendix C1.2. Searches were carried out according to the methods in the NICE guidelines manual 2012, section 5.2. Databases were searched using relevant medical subject headings and free-text terms. Searches were restricted to systematic reviews, RCTs and observational studies (where appropriate). Studies published in languages other than English were not reviewed and searches were restricted to studies published from 2000 onwards. The following databases were searched for all questions: MEDLINE, EMBASE and the Cochrane Library. CINAHL, Social Care Online, Social Policy and Practice, ASSIA, Social Service Abstracts and Sociological Abstracts were searched where appropriate for the review question. The clinical evidence search strategies can be found in Appendix C1.2. No papers published after the date of the search were considered in the evidence review.

Health Economic Literature Searching

Systematic literature searches were carried out by an information specialist in the NICE guidance information services between December 2013 and May 2014 to identify all published health economic evidence relevant to the review questions. Searches were carried out according to the methods in the NICE guidelines manual 2012, section 5.3 . Medline and EMBASE were searched using specific economic evaluation and quality of life search filters. The National Health Service (NHS) Economic Evaluation Database (NHS EED) and the Health Economic Evaluations Database (HEED) were searched using topic terms. Studies published in languages other than English were not reviewed. The health economic search strategies can be found in Appendix C1.3. No papers published after the date of the search were considered in the health economic evidence review.

Reviewing the Evidence

The evidence retrieved from the search strategy was systematically reviewed for each review protocol. Evidence identified from the literature search was reviewed by title and abstract (first sift). Those studies not meeting the inclusion criteria were excluded. Full papers of the included studies were requested. All full text papers were then reviewed and those studies not meeting the inclusion criteria were excluded (second sift).

Inclusion and Exclusion Criteria

Selection of relevant studies was carried out by applying the inclusion and exclusion criteria listed in the review protocols (see Appendix C.2). All excluded studies including reasons for exclusion can be found in Appendix C.5. The GDG was consulted about any uncertainty and made the final decision for inclusion or exclusion of these studies.

Types of Studies

Only evidence in the English language was considered. For all review questions the following types of studies were considered in the reviews:

- Systematic reviews of RCTs
- RCTs
- Observational studies (where RCTs not available)

National guidance from the UK, Europe and other countries with similar developed health systems, for example Australia, Canada and New Zealand, was used to provide context for the introductory sections of each evidence review.

Systematic reviews of RCTs were only included in full if all RCTs met the criteria listed in the review protocol. When this was not the case, relevant RCTs included in the systematic review were identified and full papers requested to determine their eligibility. Systematic reviews of observational studies and observational studies were only considered if evidence from RCTs was not identified. Conference abstracts were not considered as part of the review as higher quality evidence was identified for each question.

Evidence of Cost-effectiveness

Literature Review

The Health Economist:

- Identified potentially relevant studies for each review question from the economic search results by reviewing titles and abstracts – full papers were then obtained.
- Reviewed full papers against pre-specified inclusion/exclusion criteria to identify relevant studies (see below for details).

Inclusion and Exclusion Criteria

Full economic evaluations (studies comparing costs and health consequences of alternative courses of action: cost–utility, cost-effectiveness, cost–benefit and cost–consequence analyses) and comparative costing studies that addressed the review question in the relevant population were considered potentially includable as economic evidence. Studies that reported average cost-effectiveness without disaggregated costs and effects were excluded. Literature reviews, abstracts, posters, letters, editorials, comment articles, unpublished studies and studies not in English were excluded. Studies that only reported cost per hospital (not per patient) were excluded unless they were the only available economic evidence on an intervention. Remaining studies were prioritised for inclusion based on their relative applicability to the development of this guideline and the study limitations. For example, if a high quality, directly applicable UK analysis was available, then other less relevant studies may not have been included. Where selective exclusions occurred on this basis, this is noted in the relevant section.

For more details about the assessment of applicability and methodological quality see the economic evaluation checklist (Appendix G of the NICE guidelines manual and the health economics review protocol in Appendix C.2 in the full guideline appendices).

Number of Source Documents

Evidence of Clinical Effectiveness

The systematic literature search identified 4036 references. After removing duplicates the references were screened on their titles and abstracts and 737 references were obtained and reviewed against the inclusion and exclusion criteria, as described in the review protocol (Appendix C2.1 in the full guideline appendices [see the "Availability of Companion Documents" field]). Overall, 727 studies were excluded because they did not meet the eligibility criteria. A list of excluded studies and reasons for their exclusion is provided in Appendix C5.1. Ten studies met the eligibility criteria and were included. In addition, 7 relevant systematic reviews of observational studies were identified. The references included in these systematic reviews were also screened on their titles and abstracts, to identify any further studies that met the eligibility criteria. Eight additional studies were included.

Evidence of Cost-effectiveness

The literature search identified 2789 records, of which 2767 were excluded based on their title and abstract. The full papers of 21 records were assessed and 18 studies excluded at this stage. The excluded studies and reason for their exclusion are shown in Appendix C6.1 in the full guideline appendices. The 3 included studies are summarised in the economic evidence profile in Table 11 in the full version of the guideline (see the "Availability of Companion Documents" field).

See also Appendices C3 and C4 for consort diagrams that show the number of studies found and included/excluded for clinical and cost-effectiveness, respectively.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Overall Quality of Outcome Evidence in Grading of Recommendations Assessment, Development and Evaluation (GRADE)

Level	Description
High	Further research is very unlikely to change confidence in the estimate of effect.
Moderate	Further research is likely to have an important impact on confidence in the estimate of effect and may change the estimate.
Low	Further research is very likely to have an important impact on confidence in the estimate of effect and is likely to change the estimate.
Very Low	Any estimate of effect is very uncertain.

Methods Used to Analyze the Evidence

Meta-Analysis

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Note from the National Guideline Clearinghouse (NGC): This guideline was developed by the National Institute for Health and Care Excellence (NICE) Medicines Prescribing Centre. See the "Availability of Companion Documents" field for the full version of this guidance.

Reviewing the Evidence

Relevant data on the population, intervention, comparator and outcomes (PICO) for each included study were extracted and included in the 'Summary of included studies' table. These tables can be found in the relevant 'Evidence review' section. An overview of the systematic review process followed is outlined in Figure 1 in the full version of the guideline in accordance with the NICE guidelines manual 2012.

Characteristics of data from included studies were extracted into a standard template for inclusion in an evidence table, which can be found in Appendix D in the full guideline appendices (see the "Availability of Companion Documents" field). Evidence tables help to identify the similarities and differences between studies, including the key characteristics of the study population and interventions or outcome measures. This provides a basis for comparison.

All studies were quality assessed using the appropriate NICE methodology checklist (see NICE guidelines manual 2012, appendices B–I [see also the "Availability of Companion Documents" field]).

Methods of Combining Clinical Studies

Data Analyses for the Intervention Reviews

All review questions included interventions. Where possible, a meta-analysis was carried out to combine the results of studies for each review question using Cochrane Review Manager (RevMan5) software. However, as many different interventions were considered, for example different medicines-related communication systems, this was only possible for the review questions on medication review and patient decision aids. Pooled data were also presented in forest plots (see Appendix D.2. for all forest plots).

Risk ratios (relative risk) and odds ratios were calculated for the dichotomous outcomes, such as number of patients with a medication error. Mean differences were calculated for continuous outcomes.

Statistical heterogeneity was assessed by visually examining the forest plots, and by considering the I-squared inconsistency statistic (with an I-squared value of more than 50% indicating considerable heterogeneity). Where considerable heterogeneity was present, further analyses were conducted.

Absolute risk differences were also calculated when possible using GRADEpro software, developed by the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) working group.

Dependent on the outcome measures used, a short narrative was written for data that could not be combined, or when risk ratios or mean differences could not be calculated.

Appraising the Quality of Evidence by Outcomes

For each review question, the Guideline Development Group (GDG) identified up to 8 outcomes which were specified as being critical or important outcomes. It is important that the relative importance is specified in the review protocol before reviewing the evidence to minimise the introduction of bias. Specifying those outcomes that are critical or important helped the GDG to make judgements about the importance of the different outcomes and their impact on decision making – for example, mortality would usually be considered a critical outcome and would be given greater weight when considering the clinical effectiveness of an intervention than an important outcome with less serious consequences.

Evidence for outcomes identified from included randomised controlled trials (RCTs), and where RCTs were not available observational studies were analysed. The results of the analysis were presented to the GDG in the form of the 'Grading of Recommendations Assessment, Development and Evaluation (GRADE)'. The NICE guidelines manual 2012 explains that 'GRADE is a system developed by an international working group for rating the quality of evidence across outcomes in systematic reviews and guidelines. The system is designed for reviews and guidelines that examine alternative management strategies or interventions, and these may include no intervention or current best management. The key difference from other assessment systems is that GRADE rates the quality of evidence for a particular outcome across studies and does not rate the quality of individual studies. The software used to do this was GRADEpro, developed by the GRADE working group.

For each outcome, GRADEpro was used to assess the quality of the study, considering the individual study quality factors and any meta-analysis results. Results of the analysis were presented in 'GRADE profiles' (see Appendix D.2. for all GRADE profiles).

The evidence for each outcome was examined separately for the quality elements listed and defined in Table 4 in the full version of the guideline. Each element was graded using the quality levels listed in Table 5 in the full version of the guideline. The main criteria considered in the rating of these elements are discussed below. Footnotes were used to describe reasons for grading a quality element as having serious or very serious problems. The ratings for each component were summed to obtain an overall quality assessment for each outcome (see the "Rating Scheme for the Strength of the Evidence" field).

Grading the Quality of Clinical Evidence

For pooled and unpooled results from GRADE, the overall quality of evidence for each outcome was considered. This process was followed when using GRADE:

1. A quality rating was assigned, based on the study design. RCTs start as high, observational studies as low.
2. The rating was then downgraded for the specified criteria: risk of bias (study limitations), inconsistency, indirectness, imprecision and publication bias. These criteria are detailed in Sections 3.3.6 to 3.3.9 in the full version of the guideline. Evidence from observational studies (which had not previously been downgraded) was upgraded if there was: a large magnitude of effect, a dose–response gradient, and if all plausible confounding would reduce a demonstrated effect or suggest a spurious effect when results showed no effect. Each quality element considered to have 'serious' or very serious' risk of bias was rated down by 1 or 2 points respectively. The quality of evidence was downgraded by 1 point when most of the evidence came from individual studies, either with a crucial limitation for 1 quality element, or with some limitations for multiple quality elements. The quality of evidence was downgraded by 2 points if there were a high number of limitations present for each quality element and these were in a serious form.
3. The reasons or criteria used for downgrading were specified in the footnotes of the GRADE tables. The NICE guidelines manual 2012 summarises the GRADE approach to rating the quality of evidence (see NICE guidelines manual 2012, section 6.2).

Evidence Statements (Summarising and Presenting Results for Effectiveness)

Evidence statements for outcomes were developed to include a summary of the key features of the evidence. For each question, evidence statements for clinical and cost effectiveness were summaries of the evidence, produced to support the GDG in their review of the evidence and decision-making when linking evidence to recommendations. The wording of the statement reflects the certainty or uncertainty in the estimate of effect.

Evidence of Cost-effectiveness

Evidence on cost effectiveness related to the key clinical issues being addressed in the guideline was sought. The health economist:

- Undertook a systematic review of the published economic literature.
- Undertook new cost effectiveness analysis in a priority area.

The Health Economist:

- Critically appraised relevant studies using the economic evaluations checklist as specified in the NICE guidelines manual 2012, appendix G .
- Extracted key information about the study's methods and results into evidence tables (evidence tables are included in Appendix D.1).

Economic Evidence Profiles

When relevant economic studies are identified, a NICE economic evidence profile is used to summarise cost and cost effectiveness estimates. The profile shows an assessment of applicability and methodological quality for each economic evaluation, with footnotes indicating the reasons for assessment. These assessments are made by the health economist using the economic evaluation checklist. The profile also shows:

- Incremental costs
- Incremental effects (for example, quality-adjusted life years [QALYs])
- Incremental cost effectiveness ratio for the base case analysis in the evaluation
- Information about the assessment of uncertainty in the analysis.

See Table 8 in the full version of the guideline for more details.

If a non-UK study was included in the profile, the results were converted into pounds sterling using the appropriate purchasing power parity.

Methods Used to Formulate the Recommendations

Expert Consensus

Informal Consensus

Description of Methods Used to Formulate the Recommendations

Note from the National Guideline Clearinghouse (NGC): This guideline was developed by the National Institute for Health and Care Excellence (NICE) Medicines Prescribing Centre. See the "Availability of Companion Documents" field for the full version of this guidance.

Who Developed the Guideline

A multidisciplinary Guideline Development Group (GDG) comprising health professionals and lay members developed this guideline.

NICE supported the development of this guideline. The GDG was convened by the NICE medicines and prescribing centre and was chaired by Dr Weeliat Chong in accordance with guidance from NICE and the guidelines manual (2012).

The GDG met regularly during the development of the guideline.

Staff from the NICE medicines and prescribing centre provided methodological support and guidance for the development process. The team working on the guideline included an assistant project manager, systematic reviewers (senior advisers), health economists, information scientists and a project lead. They undertook systematic searches of the literature, appraised the evidence, conducted meta-analysis and cost effectiveness analysis where appropriate and drafted the guideline in collaboration with the GDG.

Developing Recommendations

The GDG reviewed the clinical and cost-effectiveness evidence in the context of each of the 8 review questions to develop recommendations that would be useful to health and social care practitioners and commissioning and provider organisations. For each review question the GDG was presented with:

- Evidence tables for clinical and cost effectiveness evidence (see Appendix D.1 in the full guideline appendices for the evidence tables [see the "Availability of Companion Documents" field])
- Summaries of the clinical and economic evidence and quality (see Appendix D.1 for the summary of included studies and the GRADE tables)
- Forest plots (where applicable see Appendix D.2)

The recommendations were drafted based on the GDG's interpretation of the evidence presented, where they considered the relative values of different outcomes, trade-offs between benefits and harms, quality of the evidence, costs of different interventions and other factors they may need to be consider in relation to the intervention. For each review question the clinical effectiveness evidence was presented first, considering the net benefit over harm for the prioritised critical outcomes (as set out in the review protocols). This involved an informal discussion, details of which are captured in the 'Linking evidence to recommendations' (LETR) table for each review question.

The GDG then reviewed cost-effectiveness evidence and considered how this impacted on the decisions made after presentation of the clinical and cost-effectiveness. The recommendation wording considered the quality of the evidence and the confidence the GDG had in the evidence that was presented, in addition to the importance of the prioritised outcomes (the GDG's values and preferences).

Where clinical or cost-effectiveness evidence was of poor quality, conflicting or absent, the GDG drafted recommendations based on their expert opinion. Consensus based recommendations considered the balance between potential benefits and harms; economic costs compared with benefits, current practice, other guideline recommendations, patient preferences and equality issues and were agreed through discussion with the GDG.

The wording of the recommendations took into account the strength of the evidence and wording was based on the NICE guidelines manual 2012 principles; 'some recommendations are strong in that the GDG believes that the vast majority of health and other professionals and people would choose a particular intervention if they considered the evidence in the same way that the GDG has.' This is generally the case if the benefits of an intervention outweigh the harms for most people and the intervention is likely to be cost effective. Where the balance between benefit and harm is less clear cut, then the recommendations are 'weaker'; some people may not choose an intervention, whereas others would. The NICE guidelines manual 2012 states that 'A general principle of NICE clinical guidelines is that patients should be informed of their choices and be involved in decisions about their care'. This was particularly important in this guideline, where many review questions focused on involving the patient in decisions about their medicines.

See the NICE guidelines manual 2012, section 9 (see also the "Availability of Companion Documents" field) for more information on developing and wording recommendations.

Rating Scheme for the Strength of the Recommendations

Strength of Recommendations

Some recommendations can be made with more certainty than others. The Guideline Development Group (GDG) makes a recommendation based on the trade-off between the benefits and harms of an intervention, taking into account the quality of the underpinning evidence. For some interventions, the GDG is confident that, given the information it has looked at, most patients would choose the intervention. The wording used in the recommendations in this guideline denotes the certainty with which the recommendation is made (the strength of the recommendation).

Interventions That Must (or Must Not) Be Used

The GDG usually uses 'must' or 'must not' only if there is a legal duty to apply the recommendation. Occasionally the GDG uses 'must' (or 'must not') if the consequences of not following the recommendation could be extremely serious or potentially life threatening.

Interventions That Should (or Should Not) Be Used – a 'Strong' Recommendation

The GDG uses 'offer' (and similar words such as 'refer' or 'advise') when confident that, for the vast majority of patients, an intervention will do more good than harm, and be cost effective. Similar forms of words (for example, 'Do not offer…') are used when the GDG is confident that an intervention will not be of benefit for most patients.

Interventions That Could Be Used

The GDG uses 'consider' when confident that an intervention will do more good than harm for most patients, and be cost effective, but other options may be similarly cost effective. The choice of intervention, and whether or not to have the intervention at all, is more likely to depend on the patient's values and preferences than for a strong recommendation, and so the healthcare professional should spend more time considering and discussing the options with the patient.

Cost Analysis

Undertaking New Health Economic Analysis

As well as reviewing the published economic literature for each review question, new economic analysis was undertaken by the Health Economist in a priority area. The priority area for new health economic analysis was agreed by the GDG after formation of the review questions and consideration of the available health economic evidence.

The GDG identified medicines reconciliation as the highest priority area for original economic modelling. This was due to having sufficient data to populate the model in an area where potential costs and health benefits occurring from medication taken in error are large. In 2007, NICE and the National Reporting and Learning System (part of the National Patient Safety Agency [NPSA]) issued joint guidance Technical patient safety solutions for medicines reconciliation on admission of adults to hospital (PSG001). A cost-utility model comparing methods of medicines reconciliation at hospital admission had been developed for this guidance. The GDG felt that the model structure used in Technical patient safety solutions for medicines reconciliation on admission of adults to hospital (PSG001) was appropriate; therefore, this model was updated to utilise evidence from the clinical effectiveness review.

The following general principles were adhered to in developing the cost effectiveness analysis:

- Methods were consistent with the NICE reference case.
- The GDG was involved in agreeing to use the published model structure, selection of model inputs and interpretation of results.
- Model inputs were based on the systematic review of the clinical literature supplemented with other published data sources where possible.
- When published data were not available GDG expert opinion was used to populate the model.
- Model inputs and assumptions were reported fully and transparently.
- The results were subject to sensitivity analysis and limitations were discussed.
- The model was peer-reviewed by another health economist at York Health Economics Consortium.

The full methods for the cost-effectiveness analysis of medicines reconciliation are described in Appendix F in the full guideline appendices (see the "Availability of Companion Documents" field).

Cost-effectiveness Criteria

NICE's document Social value judgements: principles for the development of NICE guidance (2nd edition) sets out the

principles that GDGs should consider when judging whether an intervention offers good value for money. An intervention was considered to be cost effective if either of the following criteria applied (given that the estimate was considered plausible):

- The intervention dominated other relevant strategies (that is, it was both less costly in terms of resource use and more clinically effective compared with all the other relevant interventions)
- The intervention cost less than £20,000 per QALY gained compared with next best intervention

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

This short clinical guideline is subject to a 4 week public consultation. This allows stakeholders, members of the public and other National Institute for Health and Care Excellence (NICE) teams to peer review the document as part of the quality assurance process. All comments received from registered stakeholders within the specified deadline will be responded to. All comments received and responses given will be posted on the NICE website (see NICE guidelines manual 2012, section 11 [see also the "Availability of Companion Documents" field]).

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of evidence supporting the recommendations is not specifically stated.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

- Optimising a person's medicines is important to ensure a person is taking their medicines as intended and can support the management of long-term conditions, multimorbidities and polypharmacy.
- Effective systems and processes can minimise the risk of preventable medicines-related problems such as side effects, adverse effects or interactions with other medicines or comorbidities.

Refer to the "Trade-off between benefits and harms" sections of the full version of the guideline for (see the "Availability of Companion Documents" field) for details about benefits of specific interventions.

Potential Harms

See the "Trade-off between clinical benefits and harms" sections in the full version of the guideline (see the "Availability of Companion Documents" field) for details about harms of specific interventions.

Qualifying Statements

Qualifying Statements

- This guidance represents the view of the National Institute for Health and Care Excellence (NICE), which was arrived at after careful

consideration of the evidence available. Healthcare professionals are expected to take it fully into account when exercising their clinical judgement. However, the guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer, and informed by the summary of product characteristics of any drugs.

- Implementation of this guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity and foster good relations. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with those duties
- In this guideline, the term 'medicines' covers all healthcare treatments, such as oral medicines, topical medicines, inhaled products, injections, wound care products, appliances and vaccines.
- Remember that child maltreatment:
    - Is common
    - Can present anywhere
    - May co-exist with other health problems

  See the NICE guideline on child maltreatment for clinical features that may be associated with maltreatment.

- The guideline will assume that prescribers will use a medicine's summary of product characteristics to inform decisions made with individual patients.
- For all recommendations, NICE expects that there is discussion with the patient about the risks and benefits of the interventions, and their values and preferences. This discussion aims to help them to reach a fully informed decision.
- Treatment and care should take into account individual needs and preferences. Patients should have the opportunity to make informed decisions about their care and treatment, in partnership with their health professionals. If the person is under 16, their family or carers should also be given information and support to help the child or young person to make decisions about their treatment. If it is clear that the child or young person fully understands the treatment and does not want their family or carers to be involved, they can give their own consent. Health professionals should follow the Department of Health's advice on consent . If a person does not have capacity to make decisions, health and social care practitioners should follow the code of practice that accompanies the Mental Capacity Act and the supplementary code of practice on deprivation of liberty safeguards .
- NICE has produced guidance on the components of good patient experience in adult National Health Service (NHS) services. All health professionals should follow the recommendations in Patient experience in adult NHS services . In addition, all health and social care practitioners working with people using adult NHS mental health services should follow the recommendations in Service user experience in adult mental health . If a young person is moving between paediatric and adult services, care should be planned and managed according to the best practice guidance described in the Department of Health's Transition: getting it right for young people . Adult and paediatric healthcare teams should work jointly to provide assessment and services to young people and diagnosis and management should be reviewed throughout the transition process. There should be clarity about who is the lead clinician to ensure continuity of care.

Implementation of the Guideline

Description of Implementation Strategy

Implementation tools and resources to help users put the guideline into practice are available on the National Institute for Health and Care Excellence (NICE) Web site (see also the "Availability of Companion Documents" field).

Key Priorities for Implementation

The following recommendations have been identified as priorities for implementation.

Systems for Identifying, Reporting and Learning from Medicines-Related Patient Safety Incidents

Organisations should consider using multiple methods to identify medicines-related patient safety incidents – for example, health record review, patient surveys and direct observation of medicines administration. They should agree the approach locally and review arrangements regularly to reflect local and national learning.

Medicines-related Communication Systems When Patients Move from One Care Setting to Another

Health and social care practitioners should share relevant information about the person and their medicines when a person transfers from one care setting to another. This should include, but is not limited to, all of the following:

- Contact details of the person and their general practitioner (GP)
- Details of other relevant contacts identified by the person, and their family members or carers where appropriate – for example, their nominated community pharmacy
- Known drug allergies and reactions to medicines or their ingredients, and the type of reaction experienced (see the National Guideline Clearinghouse summary of the NICE guideline Drug allergy: diagnosis and management of drug allergy in adults, children and young people [NICE clinical guideline 183])
- Details of the medicines the person is currently taking (including prescribed, over-the-counter and complementary medicines) – name, strength, form, dose, timing, frequency and duration, how the medicines are taken and what they are being taken for
- Changes to medicines, including medicines started or stopped, or dosage changes, and reason for the change
- Date and time of the last dose, such as for weekly or monthly medicines, including injections
- What information has been given to the person, and their family members or carers where appropriate
- Any other information needed – for example, when the medicines should be reviewed, ongoing monitoring needs and any support the person needs to carry on taking the medicines. Additional information may be needed for specific groups of people, such as children.
- Consider sending a person's medicines discharge information to their nominated community pharmacy, when possible and in agreement with the person.

Medicines Reconciliation

Organisations should ensure that medicines reconciliation is carried out by a trained and competent health professional – ideally a pharmacist, pharmacy technician, nurse or doctor – with the necessary knowledge, skills and expertise including:

- Effective communication skills
- Technical knowledge of processes for managing medicines
- Therapeutic knowledge of medicines use

Implementation Tools

Clinical Algorithm

Mobile Device Resources

Patient Resources

Resources

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

National Institute for Health and Care Excellence (NICE). Medicines optimisation: the safe and effective use of medicines to enable the best possible outcomes. London (UK): National Institute for Health and Care Excellence (NICE); 2015 Mar 4. 47 p. (NICE guideline; no. 5).

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

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Guideline Developer(s)

National Institute for Health and Care Excellence (NICE) - National Government Agency [Non-U.S.]

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National Institute for Health and Care Excellence (NICE)

Guideline Committee

Guideline Development Group

Composition of Group That Authored the Guideline

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Financial Disclosures/Conflicts of Interest

At the start of the guideline development process all Guideline Development Group (GDG) members declared interests including consultancies, fee-paid work, share-holdings, fellowships and support from the healthcare industry. At all subsequent GDG meetings, members declared arising

conflicts of interest. If a member's declared interest could be a conflict in the development of the guideline, the Chair asked the member to either withdraw completely or for part of the discussion in line with the National Institute for Health and Care Excellence (NICE) code of conflict and the guidelines manual (2012). The details of declared interests and the actions taken are shown in Appendix A in the full guideline appendices (see the "Availability of Companion Documents" field). See Section 4.5 in the original guideline document for declarations of interest.

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Electronic copies: Available in from the National Institute for Health and Care Excellence (NICE) Web site . Also available for download as an ePub or eBook from the NICE Web site .

Availability of Companion Documents

The following are available:

- Medicines optimisation: the safe and effective use of medicines to enable the best possible outcomes. Full guideline. London (UK): National Institute for Health and Care Excellence (NICE); 2015 Mar. 220 p. (NICE guideline; no. 5). Electronic copies: Available from the National Institute for Health and Care Excellence (NICE) Web site .
- Medicines optimisation: the safe and effective use of medicines to enable the best possible outcomes. Appendices. London (UK): National Institute for Health and Care Excellence; 2015 Mar. 428 p. (NICE guideline; no. 5). Electronic copies: Available from the NICE Web site .
- Medicines optimization: the safe and effective use of medicines to enable the best possible outcomes. Costing statement. London (UK): National Institute for Health and Care Excellence; 2015 Mar. 8 p. (NICE guideline; no. 5). Electronic copies: Available from the NICE Web site .
- Medicines optimization: the safe and effective use of medicines to enable the best possible outcomes. Baseline assessment tool. London (UK): National Institute for Health and Care Excellence; 2015 Mar. (NICE guideline; no. 5). Electronic copies: Available from the NICE Web site .
- The guidelines manual 2012. London (UK): National Institute for Health and Care Excellence (NICE); 2012 Nov. Electronic copies: Available from the NICE Web site .

Patient Resources

The following is available:

- Medicines optimisation: the safe and effective use of medicines to enable the best possible outcomes. Information for the public. London (UK): National Institute for Health and Care Excellence; 2015 Mar. 8 p. (NICE guideline; no. 5). Electronic copies: Available from the National Institute for Health and Care Excellence (NICE) Web site . Also available for download as an ePub or eBook from the NICE Web site .

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC Status

This NGC summary was completed by ECRI Institute on May 26, 2015.

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